

Mineral Industry Surveys

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VANADIUM IN JANUARY 2004

Reported domestic consumption of vanadium in January 2004 was about 4% more than that of the previous month and was slightly less than that of January 2003, according to the U.S. Geological Survey. Consumer stocks of vanadium, in all forms, were 238 metric tons (t) at the beginning of 2004, and 208 t at the end of January.

According to Ryan's Notes (2004b), U.S. ferrovanadium (FeV) prices ranged from \$8.288 to \$8.769 per pound of vanadium content in January, as compared with \$5.806 to \$5.988 in December. European FeV prices ranged from \$17.575 to \$18.250 per kilogram in January as compared with \$12.788 to \$13.600 in December. In the United States, FeV spot sales were booked at \$8.50 to \$10.50 per pound, and European FeV spot prices jumped to \$18.00 to \$20.00 per kilogram at the end of January (Ryan's Notes, 2004a). In January, vanadium pentoxide (V_2O_5) prices ranged from \$3.119 to \$3.250 per pound, as compared with \$2.338 to \$2.388 in December. V_2O_5 spot sales in the United States rose to \$3.55 to \$4.00 per pound from about \$2.65 to \$2.70 at the end of December.

Shieldalloy Metallurgical Corporation (Shieldalloy) neared normal production at its Cambridge, OH, ferrovanadium plant as temporary replacement workers got up to speed. Temporary workers received technical and safety training daily. When asked if the plant's lost production in the weeks after the strike began might result in declaration of *force majeure*, the plant

general manager stated "We are not declaring *force majeure* at this particular point." (Metals Week, 2004).

Recent price increases apparently are more the result of reduced supply than increased demand. The United States is seeing lower levels of imports from South Africa and China owing to imposition of tariffs in 2003. This, coupled with supply disruptions at Shieldalloy due to the ongoing strike, has led to the current upward price momentum. In Europe, reduced supply from Xstrata due to plant closures in 2003, and Russia's Tulachermet-Vanadium operating at 60%-70% of capacity, have reduced material available for use. In China, a new law required vanadium to be added to all steel rebar. In addition, the cutbacks of production in Russia reduced material available for export to the Asian market. The combined effect of these developments drove worldwide vanadium prices upward in January (Metal Bulletin Research, 2004).

References Cited

- Metal Bulletin Research, 2004, Vanadium highlights, ownership dispute caused falling production in Russia: Metal Bulletin Research, Ferro-alloys Monthly, no. 137, January 30, p. 15.
Metals Week, 2004, Metallurg Vanadium nears normal output despite strike: Metals Week, v. 75, no. 1, January 5, p. 12.
Ryan's Notes, 2004a, FeV still hot: Ryan's Notes, v. 10, no. 4, January 26, p. 3.
Ryan's Notes, 2004b, [untitled]: Ryan's Notes, v. 10, no. 1, January 5 p. 4.

TABLE 1
U.S. CONSUMPTION AND CONSUMER STOCKS OF VANADIUM, BY FORM¹

(Kilograms, contained vanadium)

	2003				2004	
	January-December		December		January	
	Consumption	Stocks	Consumption	Stocks	Consumption	Stocks
Ferrovanadium ²	2,860,000	201,000	237,000	201,000	243,000	193,000
Vanadium-aluminum alloy	W	W	W	W	W	W
Other ³	195,000	37,400	20,100	37,400	23,600	15,200
Total	3,060,000	238,000	257,000	238,000	267,000	208,000

W Withheld to avoid disclosing company proprietary data; included with "Other."

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes other vanadium-iron-carbon alloys as well as vanadium oxides added directly to steel.

³Includes other vanadium alloys, vanadium metal, vanadium pentoxide, vanadates, chlorides, other specialty chemicals, and items indicated by symbol W.

TABLE 2
U.S. CONSUMPTION OF VANADIUM, BY END USE¹

(Kilograms, contained vanadium)

	2003		2004
	January-December	December	January
Steel:			
Carbon	782,000	63,200	69,100
High-strength low-alloy	928,000	79,000	78,900
Stainless and heat-resisting	26,800	2,290	2,320
Full alloy	802,000	65,900	69,300
Tool	261,000	23,400	22,800
Total steel	2,800,000	234,000	242,000
Superalloys	13,800	1,050	1,210
Miscellaneous and unspecified ³	242,000	22,000	23,300
Total consumption	3,060,000	257,000	267,000

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes revisions to prior month's data.

³Includes cast irons, alloys excluding steel and superalloys, chemical and ceramic uses, and other miscellaneous and unspecified uses.

TABLE 3
U.S. IMPORTS AND EXPORTS OF ALUMINUM-VANADIUM MASTER ALLOY AND
VANADIUM METAL, INCLUDING WASTE AND SCRAP¹

(Kilograms, gross weight)

	Aluminum-vanadium master alloy		Vanadium metal, including waste and scrap	
	Quantity	Value	Quantity	Value
Imports for consumption:				
2002	97,500	\$206,000	32,300	\$1,270,000
2003:				
October	20,100	39,800	24,100	289,000
November	--	--	36,900	646,000
December:				
Germany	--	--	22,500	289,000
Total	--	--	22,500	289,000
Year to date	232,000	425,000	186,000	2,850,000
Exports:				
2002	529,000	11,700,000	49,200	898,000
2003:				
October	828,000	1,450,000	118	127,000
November	829,000	1,620,000	601	42,800
December:				
Canada	6,730	20,600	254	6,960
Germany	--	--	--	--
Ireland	193	2,510	--	--
Israel	1,090	5,970	--	--
Japan	18,500	256,000	2,390	39,000
Korea, Republic of	3,980	17,000	--	--
Mexico	812,000	1,330,000	--	--
Taiwan	--	--	50	7,910
Thailand	2,390	10,000	--	--
United Kingdom	65,800	242,000	--	--
Venezuela	--	--	7,780	56,300
Total	911,000	1,880,000	10,500	110,000
Year to date	6,710,000	16,700,000	201,000	3,910,000

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

TABLE 4
U.S. IMPORTS AND EXPORTS OF FERROVANADIUM, VANADIUM PENTOXIDE (ANHYDRIDE) AND
OTHER OXIDES AND HYDROXIDES OF VANADIUM¹

(Kilograms, contained vanadium)

	Ferrovanadium		Vanadium pentoxide (anhydride) ²		Other oxides and hydroxides of vanadium	
	Quantity	Value	Quantity	Value	Quantity	Value
Imports for consumption:						
2002	2,520,000	\$19,400,000	406,000	\$1,990,000	42,300	\$560,000
2003:						
October	101,000	1,100,000	--	--	3,380	40,300
November	155,000	1,600,000	10,400	133,000	10,500	277,000
December:						
Austria	30,500	332,000	--	--	--	--
Canada	50,100	556,000	--	--	--	--
Czech Republic	97,900	1,340,000	--	--	--	--
Germany	--	--	237	34,900	--	--
South Africa	--	--	70,200	488,000	--	--
Switzerland	126,000	1,440,000	--	--	--	--
Total	304,000	3,670,000	70,400	523,000	--	--
Year to date	1,360,000	14,300,000	474,000	3,610,000	38,700	769,000
Exports:						
2002	142,000	1,550,000	91,200	568,000	203,000	1,700,000
2003:						
October	21,000	292,000	450	4,050	8,660	126,000
November	23,100	304,000	--	--	28,300	175,000
December:						
Canada	12,400	181,000	--	--	3,700	54,400
Mexico	9,740	114,000	--	--	--	--
South Africa	--	--	--	--	19,400	64,800
Total	22,200	296,000	--	--	23,100	119,000
Year to date	397,000	5,420,000	185,000	1,540,000	284,000	2,450,000

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²May include catalysts containing vanadium pentoxide.

Source: U.S. Census Bureau.

TABLE 5
U.S. IMPORTS FOR CONSUMPTION OF VANADIUM-BEARING ASH, SLAG¹

(Kilograms, contained vanadium pentoxide)

	Ash and residues		Ash and residues (not from the manufacture of iron and steel)		Slag, from the manufacture of iron and steel	
	Quantity	Value	Quantity	Value	Quantity	Value
2002	3,830,000	\$520,000	10,300,000	\$1,560,000	243,000,000	\$19,900,000
2003:						
October	472,000	123,000	1,460,000	337,000	46,600,000	588,000
November	732,000	322,000	1,650,000	431,000	11,300,000	656,000
December:						
Canada	--	--	999,000	179,000	105,000,000	1,580,000
Germany	--	--	--	--	33,600	62,600
Mexico	791,000	330,000	--	--	--	--
United Kingdom	--	--	56,700	87,600	--	--
Total	791,000	330,000	1,060,000	267,000	106,000,000	1,640,000
Year to date	4,940,000	3,030,000	14,300,000	3,140,000	369,000,000	6,190,000

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF MISCELLANEOUS VANADIUM CHEMICALS¹

(Kilograms, contained vanadium)

	Sulfates		Vanadates	
	Quantity	Value	Quantity	Value
2002	14,100	\$390,000	48,100	\$567,000
2003:				
October	--	--	6,310	88,100
November	--	--	12,800	123,000
December:				
South Africa	--	--	6,270	61,600
Total	--	--	6,270	61,600
Year to date	--	--	72,900	902,000

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.